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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,815	06/23/2003	Wolfgang Franz Eckl	8-20-3	9847

7590 10/19/2005

Docket Administrator (Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

HANNON, CHRISTIAN A

ART UNIT PAPER NUMBER

2685

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/601,815	<b>Applicant(s)</b> ECKL ET AL.	
	<b>Examiner</b> Christian A. Hannon	<b>Art Unit</b> 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 6/23/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

### ***Drawings***

3. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Regarding claims 1-3 & 5-8, these claims are rife with use of the term "and/or" which consequently leads to an indefinite rendering of each of the aforementioned claims. Therefore in order to examine the case the examiner has treated each "and/or" as simply an "or" statement. Correction is required via selecting either the use of the term "and" or simply "or."

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3 & 5-8 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sun (US 6,507,475).

Regarding claim 1, Sun teaches a device for high-frequency or radio-frequency tuning comprising within one IC-package a first variable capacitor (Figure 11, Item 1110) and at least one second capacitor (Figure 11, Item 1110), each of the at least one second capacitor being fixed or variable respectively (Figure 11, Item 1110), at least one signal path connected to the first variable capacitor and providing at least one input and one output port (Figure 11, Items 1120 & 1130) and at least one controllable switching means (Figure 11, Item 1140) for individually connecting and disconnecting at

least one of the at least one second capacitor into the signal path or from the signal path, in parallel to the first variable capacitor (Column 7, Lines 12-26).

In regards to claim 2, Sun teaches the device of claim 1, further comprising at least one control signal path isolated from the RF-signal path (Column 8, Lines 45-47) into which the at least one second capacitor is connectable for controlling the switching means or for controlling at least the first variable capacitor (Figure 11, Items 1110 & 1141).

Regarding claim 3, Sun teaches the device of claim 2, wherein the at least one control path comprises means for digitally controlling a plurality of switching means individually (column 7, Lines 12-20), or wherein the at least one control path is connectable to an EPROM, to an ASIC or an FPGA (Column 7, Lines 7-11).

In regards to claim 5, Sun teaches the device of claim 1, wherein the switching means respectively comprises an actuator for driving a contact element of the switching means to close or open the switching means, or wherein at least the first variable capacitor comprises an actuator for driving a movable element of said variable capacitor to vary the effective area thereof, in particular by changing the distance between at least two plates or the degree of engagement of fingers of a comb like structure (Column 4, Lines 22-50).

Regarding claim 6, Sun teaches the device of claim 1, wherein the switching means or at least the first variable capacitor respectively comprises an actuating mechanism based on an electrostatic, piezoelectric, thermal, magnetic or bi-metallic actuator functionality (Column 4, Lines 22-50).

In regards to claim 7, Sun teaches the device of claim 1, wherein at least one controllable switching means is produced as MEMS RF-switch means, at least the first variable capacitor is produced as MEMS varactor or at least one controllable switching means and a respectively associated second variable capacitor is produced as a common MEMS component (Column 5, Lines 8-15; Figure 11).

Regarding claim 8, Sun teaches the device of claim 1, produced by using a micro-electro-mechanical-systems technology, in particular produced by employing a bulk micromachining or a surface micromachining technology (Column 5, Lines 8-15).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Tham et al (US 5,880,921).

In claim 4, Sun teaches the device of claim 1 further comprising at least two second capacitors and a first variable capacitor. However Sun fails to teach that the two second capacitors are arranged in logarithmic scale. Tham et al teach that a capacitor bank may be arranged in a logarithmic scale (Column 1, Lines 40-42). It would have been obvious to arrange the two second capacitors in Sun in a logarithmic scale, such as that taught by Tham et al, in order to achieve a non-linear capacitive bank. Furthermore since Sun teaches a variable first capacitor this capacitance could

be a capacitance and therefore reads on the limitation that it is at least adapted to match the lowest range of the logarithmic scale, which it obviously could.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ma et al (US 6,593,672) disclose a MEMS-switched stepped variable capacitor and method of making the same.

Embabi et al (US 2002/0040991) disclose a variable capacitor for tuned circuits.

Van Rumpt (US 2004/0041671) discloses a receiver comprising a digitally controlled capacitor bank.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2685

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christian A. Hannon  
October 13, 2005



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